AMENDMENTS TO THE CLAIMS

Please amend claims 1, 10, and 39, cancel claims 3, 5-7, 42, 86, 148, 212, 248, 249, 252, 253, and 258-263 without prejudice or disclaimer, and add claims 264-278. The following listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently amended) A frit comprising:

a porous support structure having a plurality of void spaces; and

a plurality of secondary particles,

wherein the void spaces are filled with the plurality of secondary particles such that the frit has a density of at least 50% by volume, [[and]]

wherein the secondary particles are dimensioned with respect to the void spaces for the frit to retain packing materials with diameters of less than about 2.5 microns, and

wherein the secondary particles are sintered within the porous support structure to each other, to the porous support structure surrounding the void spaces, or both.

2. (Original) The frit of claim 1, wherein the void spaces are partially filled with the secondary particles.

3. (Canceled)

4. (Original) The frit of claim 1, wherein the secondary particles form within the void spaces a secondary pore network having a pore size that is capable of retaining chromatographic packing materials with diameters of less than about 2.5 microns.

5.-7. (Canceled)

8. (Original) The frit of claim 1, wherein the porous support structure comprises a material selected from the group consisting of metals, metal alloys, metal oxides, ceramics, and polymers.

9. (Original) The frit of claim 1, wherein the porous support structure comprises a material selected from the group consisting of sinterable metals, sinterable metal alloys, sinterable metal oxides, sinterable ceramics, and sinterable polymers.

10. (Currently amended) The frit of claim 1, wherein the porous support structure comprises a material selected from the group consisting of stainless steel, titanium, PEEK, polyethylene, ~~Hastaloy™,~~ polypropylene, synthetic resinous fluorine-containing polymers ~~Teflon™~~, glass, silica, titania, and zirconia.

11. (Original) The frit of claim 1, wherein the porous support structure comprises stainless steel.

12. – 38. (Canceled)

39. (Currently amended) A frit configured to be received in a tubular chamber, the frit comprising:

a porous support structure having a plurality of void spaces; and

a plurality of secondary particles,

wherein the void spaces are filled with the plurality of secondary particles so as to retain chromatographic packing materials, the secondary particles being dimensioned with respect to the void spaces and the packing materials such that the frit retains the packing materials with diameters of less than about 2.5 microns, and ~~wherein the frit is oriented with respect to a flow direction through the tubular chamber~~

wherein the secondary particles are sintered within the porous support structure to each other, to the porous support structure surrounding the void spaces, or both.

40. (Original) A frit comprising:

a porous support structure having a plurality of void spaces; and a plurality of secondary particles, wherein the void spaces are filled with the plurality of secondary particles to a depth of greater than about 10 microns, and wherein the secondary

particles are dimensioned with respect to the void spaces such that the frit retains packing materials with diameters of less than about 2.5 microns.

41. – 86. (Canceled)

87. (Withdrawn) A method of preparing a frit for use in a high pressure liquid chromatography column, comprising the steps of:

providing a porous support structure having a plurality of void spaces; and filling the void spaces with secondary particles, wherein the secondary particles are dimensioned with respect to the void spaces such that the frit retains chromatographic packing materials with particle diameters of less than about 2.5 microns.

88. – 117. (Canceled)

118. (Withdrawn) A method of preparing a frit for use in a high pressure liquid chromatography column, comprising the steps of:

providing a porous support structure having a plurality of void spaces; filling the void spaces with secondary particles; and orienting the porous support structure filled with the secondary particles such that the secondary particles remain immobilized in the void spaces during use, wherein the secondary particles are dimensioned with respect to the void spaces such that the frit retains chromatographic packing materials with particle diameters of less than about 2.5 microns.

119. – 180. (Canceled)

181. (Withdrawn) A method for separating and quantifying solutes in a liquid stream, comprising the steps of:

providing a tubular chamber having first and second ends, the tubular chamber being filled with chromatographic packing materials; inserting at least one frit in the inlet and outlet fittings, the frit having: a porous support structure having a plurality of void spaces, a plurality of secondary particles, wherein the void spaces are filled with the

plurality of secondary particles, and wherein the secondary particles are dimensioned with respect to the void spaces such that the frit retains chromatographic packing materials with particle diameters of less than about 2.5 microns;

propelling the liquid stream through the tubular chamber, the liquid stream contacting the chromatographic packing materials in the tubular chamber;

injecting a sample into the liquid stream; and

detecting individual components in the liquid stream as the liquid stream exits the second end of the tubular chamber.

182. – 236. (Canceled)

237. (Previously presented) The frit of claim 1, wherein the porous support structure comprises 316 stainless steel.

238. (Previously presented) The frit of claim 1, wherein the porous support structure has a media grade ranging from about 0.5 to about 10.

239. (Previously presented) The frit of claim 1, wherein the porous support structure is 0.5 media grade sintered stainless steel.

240. (Previously presented) The frit of claim 1, wherein the porous support structure is 2.0 media grade sintered stainless steel.

241. (Previously presented) The frit of claim 1, wherein the secondary particles are about 5 microns in diameter or smaller.

242. (Previously presented) The frit of claim 1, wherein the secondary particles range from about 3 microns to about 5 microns in diameter.

243. (Previously presented) The frit of claim 1, wherein the secondary particles are about 3.5 microns in diameter.

244. (Previously presented) The frit of claim 243, wherein the secondary particles are about 4 microns in diameter.

245. (Previously presented) The frit of claim 1, wherein the porous support structure is 0.5 media grade sintered stainless steel, and the secondary particles are about 4 microns in diameter.

246. (Previously presented) The frit of claim 1, wherein the porous support structure is 2.0 media grade sintered stainless steel, and the secondary particles are about 4 microns in diameter.

248.-249. (Canceled)

249. (Previously presented) The frit of claim 1, wherein the secondary particles have the same composition as the porous support structure.

250. (Previously presented) The frit of claim 1, wherein the secondary particles have a different composition than the porous support structure.

251. (Previously presented) The frit of claim 1, wherein the secondary particles are spherical stainless steel particles.

252.-253. (Canceled)

254. (Previously presented) The frit of claim 1 for use in a chromatography column.

255. (Previously presented) The frit of claim 254, wherein the chromatography column is a high pressure liquid chromatography (HPLC) column.

256. (Previously presented) The frit of claim 255, wherein the chromatography column is a high pressure liquid chromatography column packed with chromatographic packing materials with particle diameters of less than about 2.5 microns.

257. (Previously presented) The frit of claim 1, wherein the secondary particles fill the void spaces of the porous support structure to a depth of greater than about 10 microns.

258.-263. (Canceled)

264. (New) The frit of claim 40, wherein the secondary particles are sintered to each other, to the porous support structure surrounding the void spaces, or both.

265. (New) The frit of claim 254, wherein the chromatography column is packed with chromatographic packing materials.

266. (New) The frit of claim 265, wherein the chromatographic packing materials are selected from the group consisting of silica gel, derivatized silica gel, zirconia, derivatized zirconia, titanium oxide, derivatized titanium oxide, organo-silica hybrids, derivatized organo-silica hybrids, hybrids of metal oxides, and derivatized hybrids of metal oxides.

267. (New) The frit of claim 265, wherein the chromatographic packing materials have the same composition as the secondary particles.

268. (New) The frit of claim 265, wherein the chromatographic packing materials have a different composition than the secondary particles.

269. (New) A method of preparing a frit for use in a high pressure liquid chromatography column, comprising the steps of:

providing a porous support structure having a plurality of void spaces; and

filling the void spaces with secondary particles,

wherein the void spaces are filled with the plurality of secondary particles such that the frit has a density of at least 50% by volume,

wherein the secondary particles are dimensioned with respect to the void spaces for the frit to retain packing materials with diameters of less than about 2.5 microns, and

wherein the secondary particles are sintered within the porous support structure to each other, to the porous support structure surrounding the void spaces, or both.

270. (New) The method of claim 269, wherein the secondary particles fill the void spaces of the porous support structure to a depth of greater than about 10 microns.

271. (New) A method for separating and quantifying solutes in a liquid stream, comprising the steps of:

providing a tubular chamber having first and second ends, the tubular chamber being filled with chromatographic packing materials;

inserting at least one frit in the inlet and outlet fittings, the frit having: a porous support structure having a plurality of void spaces, a plurality of secondary particles, wherein the void spaces are filled with the plurality of secondary particles such that the frit has a density of at least 50% by volume, wherein the secondary particles are dimensioned with respect to the void spaces such that the frit retains chromatography packing materials with particle diameters of less than about 2.5 microns, and wherein the secondary particles are sintered within the porous support structure to each other, to the porous support structure surrounding the void spaces, or both;

propelling the liquid stream through the tubular chamber, the liquid stream contacting the chromatographic packing materials in the tubular chamber;
injecting a sample into the liquid stream; and

detecting individual components in the liquid stream as the liquid stream exits the second end of the tubular chamber.

272. (New) The method of claim 271, wherein the secondary particles fill the void spaces of the porous support structure to a depth of greater than about 10 microns.

273. (New) A method of preparing a frit for use in a high pressure liquid chromatography column, comprising the steps of:

providing a porous support structure having a plurality of void spaces; and

filling the void spaces with secondary particles,

wherein the void spaces are filled with the plurality of secondary particles such to a depth of greater than about 10 microns, and

wherein the secondary particles are dimensioned with respect to the void spaces for the frit to retain packing materials with diameters of less than about 2.5 microns.

274. (New) The method of claim 273, wherein the secondary particles are sintered to each other, to the porous support structure surrounding the void spaces, or both.

275. (New) A method for separating and quantifying solutes in a liquid stream, comprising the steps of:

providing a tubular chamber having first and second ends, the tubular chamber being filled with chromatographic packing materials;

inserting at least one frit in the inlet and outlet fittings, the frit having: a porous support structure having a plurality of void spaces, a plurality of secondary particles, wherein the void spaces are filled with the plurality of secondary particles such to a depth of greater than about 10 microns, and wherein the secondary particles are dimensioned with respect to the void spaces such that the frit retains chromatography packing materials with particle diameters of less than about 2.5 microns;

propelling the liquid stream through the tubular chamber, the liquid stream contacting the chromatographic packing materials in the tubular chamber;
injecting a sample into the liquid stream; and

detecting individual components in the liquid stream as the liquid stream exits the second end of the tubular chamber.

276. (New) The method of claim 275, wherein the secondary particles are sintered to each other, to the porous support structure surrounding the void spaces, or both.

277. (New) The frit of claim 39, wherein the porous support structure is 0.5 media grade sintered stainless steel, and the secondary particles are about 4 microns in diameter.

278. (New) The frit of claim 39, wherein the porous support structure is 2.0 media grade sintered stainless steel, and the secondary particles are about 4 microns in diameter.